UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,211	04/28/2005	Jaap Andre Haitsma	2167.007US1	7069

21186   7590   12/17/2008
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ART UNIT	PAPER NUMBER
2435	

MAIL DATE	DELIVERY MODE
12/17/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _29 October 2008_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-8 and 12-27_ is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-8 and 12-27_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All   b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _9/15/08, 10/29/08_.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1. Applicant's amendment filed on Oct. 29, 2008 has been entered. Claims 1-8 and 12-27 are pending. Claims 1, 7, 16, 26 are amended by the applicant.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 12, 13, 14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 12 recites, "An apparatus arranged to match a set of input fingerprint blocks...., the apparatus comprising a processing unit arranged to: selecting/select a first fingerprint block..., finding/find a first matching fingerprint block..., selecting/select a further fingerprint block....; locating/locate a corresponding fingerprint block...; determining/determine if the corresponding fingerprint block matches said further fingerprint block...". In accordance with specification [paragraph 0070], the appratus are not limited to hardware or a combination of hardware and software, instead being sufficiently broad so as to encompass software alone. As such, the claimed apparatus must include the hardware necessary to realize any of the functionality of the claimed modules/units and produce a useful, concrete and tangible result. Absent recitation of such hardware as part of the claimed system, it is considered non-statutory.

Claims 13, 14 depend on claim 12, therefore they are rejected with the same rationale applied against claim 12 above.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 6-8, 12-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cano et al. al. (IDS filed 04/13/2006, "Robust Sound Modeling for Song Detection in Broadcast Audio", hereinafter "Cano") and further in view of Wang et al (US Patent No. 6,990,453).

As per claim 1, Cano teaches:

selecting a first fingerprint block of said input set of fingerprint blocks; finding a first matching fingerprint block in said database that matches the first fingerprint block [page 5, left column, under Approximate Matching, discloses the audio fingerprint matching, which compares fingerprints from observed audio signals against reference fingerprints in a database (i.e. exact matching)]; selecting a further fingerprint block from said set of input fingerprint blocks at a second position in the input set of fingerprint blocks relative

to the first position; locating a corresponding fingerprint block in said database at the position corresponding to the second position in the set of fingerprint blocks; and determining if the corresponding fingerprint block matches said further fingerprint block [page 5, right column, under Special Properties, wherein it is disclosed that AudioGenes have additional time information which is a significant difference to standard string applications, and that this information is used in the an approximate matching algorithm (see also Fig. 6)]. Cano teaches matching method based on the fingerprints as above. Cano does not expressively mention fingerprints at distinct positions/locations.

However, in an analogous art, Wang discloses a method for matching the fingerprint blocks wherein fingerprints blocks located at distinct positions/locations as shown in Figs. 1, 4, 6, 9A. Wang teaches: the first fingerprint block associated with a first position, selecting a further fingerprint block from said set of input fingerprint blocks, the further fingerprint block associated with a second position in the input set of fingerprint blocks relative to the first position associated with said first fingerprint block, the second position being distinct from the first position; determining if the corresponding fingerprint block matches said further fingerprint block [Fig. 1, 4, 6, 9A, col. 6 lines 35-42, col. 8 lines 50-56, 61-67, col. 9 lines 62-67, col. 14 lines 46-56, col. 16 lines 4-32].

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Wang with Cano, since one would have been motivated to recognize a content (sound, audio video…etc.) that is highly distorted or contains a high level of noise [Wang, col. 1 lines 16-18].

As per claim 2, the rejection of claim 1 is incorporated and Cano discloses: iteratively repeating selecting a further fingerprint block, locating a corresponding fingerprint block in said database and determining if said located fingerprint block matches said selected further fingerprint block for different predetermined positions relative to the first selected fingerprint block [Page 5, right column under Matching Process, where it is disclosed under that a short subsequence of AudioDNA from an observed audio stream are continuously extracted and compared with the fingerprints in the database. The results of exact match are stored in a balanced tree data structure for further processing steps, and that an approximate matching is used to detect similarities of longer sequences starting at the position of the exact matches].

As per claim 3, the rejection of claim 1 is incorporated and Cano discloses: wherein the second position is an adjacent position [Page 4, left column, discloses AudioDNA, wherein it is disclosed that the spacing between blocks is around 10 ms and blocks are overlapped to give longer analysis window about 25 ms].

As per claim 6, the rejection of claim 1 is incorporated and Cano discloses: receiving an information signal; dividing the information signal into sections; and generating said set of input fingerprint blocks by calculating a fingerprint block for each section [page 4, left column, Fingerprint Extraction: AudioDNA, where the input audio is divided into blocks and from each block some features is derived].

As per claim 7, the rejection of claim 1 is incorporated and Cano discloses: Cano discloses a method of generating a logging report for an information signal comprising: dividing the information signal into similar content segments; generating an input fingerprint block for each segment; and repeating the method steps as claimed in claim 1 so as to identify each of said blocks [(page 4, left column, Fingerprint Extraction: AudioDNA, where the input audio is divided into blocks and from each block some features is derived, see also rejection of claim 1 above)].

As per claim 8, the rejection of claim 7 is incorporated and Cano discloses:, wherein said information signal comprises an audio signal, and wherein each segment corresponds to at least a portion of a song [Page 4, left column, discloses AudioDNA, wherein it is disclosed that the spacing between blocks is around 10 ms and blocks are overlapped to give longer analysis window about 25 ms].

As per claim 12, it encompasses limitations that are similar to limitations of claim 1. Thus, it is rejected with the same rationale applied against claim 1 above.

As per claim 13, the rejection of claim 12 is incorporated and Cano discloses: a database arranged to store fingerprints identifying respective information signals and meta-data associated with each signal [page 2, Audio Fingerprinting, Fig. 1 and associated text, i.e. *building the database* based on acoustic characteristics].

As per claim 14, the rejection of claim 12 is incorporated and Cano discloses: a receiver for receiving an information signal, and a fingerprint generator arranged to generate said set of input fingerprint blocks from said information signal [Fig. 1 and associated text , page 2, left column, Audio Fingerprinting, where two operating modes are discussed, wherein actual audio identification of the unlabelled audio is processed in order to extract the fingerprint, then the fingerprint is compared to the fingerprints of the database].

As per claim 15, it encompasses limitations that are similar to limitations of claim 1. Thus, it is rejected with the same rationale applied against claim 1 above.

As per claim 16, Cano teaches:

receiving a plurality of input fingerprint blocks, the plurality of fingerprint blocks to represent an input information segment; selecting a first fingerprint block from the plurality of input fingerprint blocks; determining a first matching fingerprint block in the reference database that matches the first fingerprint block [page 5, left column, under Approximate Matching, discloses the audio fingerprint matching, which compares fingerprints from observed audio signals against reference fingerprints in a database (i.e. exact matching)]; determining a further fingerprint block at a second position in the plurality of input fingerprint blocks; in the reference database, determining a corresponding fingerprint block in said database at the position corresponding to the second position; and comparing the further fingerprint block and the corresponding

fingerprint block [page 5, right column, under Special Properties, wherein it is disclosed that AudioGenes have additional time information which is a significant difference to standard string applications, and that this information is used in the an approximate matching algorithm (see also Fig. 6)].

Cano teaches matching method based on the fingerprints as above.

Cano does not expressively mention fingerprints at distinct positions/locations.

However, in an analogous art, Wang discloses a method for matching the fingerprint blocks wherein fingerprints blocks located at distinct positions/locations as shown in Figs. 1, 4, 6, 9A. Wang teaches: the first fingerprint block associated with a first position, selecting a further fingerprint block from said set of input fingerprint blocks, the further fingerprint block associated with a second position in the input set of fingerprint blocks relative to the first position associated with said first fingerprint block, the second position being distinct from the first position; determining if the corresponding fingerprint block matches said further fingerprint block [Fig. 1, 4, 6, 9A, col. 6 lines 35-42, col. 8 lines 50-56, 61-67, col. 9 lines 62-67, col. 14 lines 46-56, col. 16 lines 4-32].

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Wang with Cano, since one would have been motivated to recognize a content (sound, audio video…etc.) that is highly distorted or contains a high level of noise [Wang, col. 1 lines 16-18].

As per claim 17, the rejection of claim 16 is incorporated and Wang teaches: identifying the information segment as a reference information segment from the reference

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database in response to the positive match [Fig. 1, 4, 6, 9A, col. 6 lines 35-42, col. 8 lines 50-56, 61-67, col. 9 lines 62-67, col. 14 lines 46-56, col. 16 lines 4-32].

As per claim 18, the rejection of claim 17 is incorporated and Wang teaches: the identifying of the information segment as the reference information segment is in response to real time monitoring [col. 6 lines 35-42, 61-65, col. 8 lines 50-56, 61-67, col. 9 lines 62-67].

As per claim 19, the rejection of claim 17 is incorporated and Wang teaches:

the real time monitoring is associated with a radio broadcast [col. 6 lines 61-65, col. 15 lines 25-44].

As per claim 20, the rejection of claim 12 is incorporated and Cano discloses:

the predetermined relationship is based on one fingerprint block being adjacent to another fingerprint block [Page 5, right column under Matching Process, Page 4, left column, discloses AudioDNA, wherein it is disclosed that the spacing between blocks is around 10 ms and blocks are overlapped to give longer analysis window about 25 ms].

As per claim 21, the rejection of claim 16 is incorporated and Wang teaches:

the information segment comprises an image [col. 5 lines 36-59].

As per claim 22, the rejection of claim 21 is incorporated and Wang teaches:

the predetermined relationship is based on two fingerprint blocks corresponding to two image segments located along a diagonal of the image [col. 6 lines 35-42, col. 8 lines 50-56, 61-67, col. 9 lines 62-67].

As per claim 23, the rejection of claim 16 is incorporated and Wang teaches:

the determining of the further fingerprint block comprises utilizing a length of the input information segment, in addition to utilizing the first position [col. 6 lines 35-42, col. 8 lines 50-56, 61-67, col. 9 lines 62-67].

As per claim 24, the rejection of claim 12 is incorporated and Wang teaches:

the information signal comprises a video signal [col. 5 lines 36-59].

As per claim 25, the rejection of claim 12 is incorporated and Wang teaches:

the information signal comprises an audio signal [col. 5 lines 36-59].

As per claim 26, it encompasses limitations that are similar to limitations of claim 16. Thus, it is rejected with the same rationale applied against claim 16 above. Further, Wang teaches: the input information signal comprising content without meta-data [col. 6 lines 35-42, col. 8 lines 50-56, 61-67, col. 9 lines 62-67].

As per claim 27, the rejection of claim 1 is incorporated and Wang teaches:

Wang teaches: the input information signal comprising content without meta-data [col. 6 lines 35-42, col. 8 lines 50-56, 61-67, col. 9 lines 62-67].

4. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cano et al. al. (IDS filed 04/13/2006, "Robust Sound Modeling for Song Detection in Broadcast Audio", hereinafter "Cano") in view of Wang et al (US Patent No. 6,990,453) and in view of Burges et al (US Patent No. 7,082,394).

As per claims 4 and 5, the rejection of claim 1 is incorporated and Cano teaches: wherein a match in said finding step is deemed to have occurred if the number of differences between the selected fingerprint block and the least one fingerprint block in said database is below a first threshold (page 5, right column (Matching Process0, wherein a the actual result (matching music title or "unknown") of the approximate matching process is derived from an empiric model using similarity values S computed over length of the compared sequence).

Cano does not teach a match in said determining is deemed to have occurred if a number of differences between the selected further fingerprint blocks and the located fingerprint block is below a second threshold, wherein said second threshold is different from said first threshold.

However, in an analogous art, Burges is directed to Noise-Robust Feature Extraction using Multi-layer Principal Component Analysis, wherein two fingerprints per

audio clip are used: the initial one, and a 'confirmatory" fingerprint right after initial one which allows a threshold for acceptance to be lowered (col. 5, lines 20-41).

Therefore, it would have been obvious to one of ordinary skill in the art to employ the teachings of Burges in the method and system of Cano for a second threshold different from the first the first threshold for several reasons suggested by Burges (col. 5, lines 25-37).

Response to Arguments

5. Applicant's arguments filed Oct. 29, 2008 have been fully considered but they are not persuasive.

Regarding to applicant's argument to claim 1, Examiner disagrees, since Cano teaches a system and method for covering a fast and efficient comparing of observed fingerprints against a huge database with reference fingerprints. In matching algorithm, short subsequences of AudioDNA from an observed audio stream are continuously extracted and compared with the fingerprints in the database, then approximate matching method is applied to detect similarities of longer subsequence starting at the position of the exact matches (i.e. approximate matching algorithms starting at the positions of the previously found positions). Therefore, Cano teaches matching mechanism as above. Further, Wang's invention relates to a method for recognizing an audio sample locates an audio file that most closely matches the audio sample from database indexing a large set of original recording. The method identifies a winning

media file, a media file whose relative locations of the same fingerprints most closely match the relative locations of the same fingerprints of the exogenous sample. For, each landmark, a fingerprint characterizing one or more features of the sample at or near the landmark is obtained. The sample fingerprints are used to retrieve sets of matching fingerprints stored in a database. As shown in Fig. 3, landmarks are computed, and then fingerprints are computed at or near the landmarks. Landmarks occur at specific timepoints of the sound and have value in time units as shown in Fig. 4. Once the landmarks have been computed, a fingerprint is computed at each landmark timepoint. To index the sound database, each recording in the collection is subjected to a landmarking and fingerprinting analysis that generates an index set for each audio file. Therefore, Wang teaches selecting fingerprints at distinct landmarks/locations to determine most closely match fingerprint from the database. Therefore, the combination of Cano and Wang teaches the claim subject matter. Based on the reason above the rejection is maintained, however, if the applicant believes that the pending claims are distinct from the cited prior art, applicant needs to further clarify the claim limitation/language.

Examiner has acknowledged the applicant's remark (…tangible storage medium) regarding the specification objection and therefore, the specification objection is withdrawn.

Regarding 35 USC § 101 rejection, applicant has amended the claim 1, 16, 26 to correct the 35 USC § 101 issue. The newly amended claims 1, 16, 26, overcome such deficiency. Therefore, the 35 USC § 101 rejection is withdrawn. However, claim 12 is still rejected under 35 USC § 101. See details above.

Conclusion

6. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nirav Patel whose telephone number is 571-272-5936. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on 571-272-3859. The fax and phone numbers for the organization where this application or proceeding is assigned is 571-

273-8300. Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 571-272-

2100.

/N. P./

Examiner, Art Unit 2435

/Kimyen Vu/

Supervisory Patent Examiner, Art Unit 2435